DeskProto

Producing programmes for 3 axis milling machines from solid models is so easy for todays designers, using this remarkably small and useful package.

Sara Lee is well known to housewives throughout the UK as the supplier of household and body care products, such as Badedas, Sanex, Odorex, Prodent and Ambi-Pur. Creating a successful product range that must jostle on the supermarket shelves with its competitors relies on striking package design, as much as on the product itself. Accordingly, Sara lee has set up a special packaging division to focus on this issue. Designing was done using Unigraphics very powerful CAD/CAM software that was also able to create rapid prototypes on an in-house milling machine.

Recently, Sara Lee decided to simplify the whole procedure, using, instead DeskProto 3D CAM software from Delft Spline Systems in Holland, specially designed for producing prototypes by designers using 3D solid models from any CAD application - in this case, Solid-Works. Explaining the decision, Karel Lampe, Senior Design Consultant at Sara lee, said that "our design staff does not use CAM software on a daily basis. To calculate CNC toolpaths in Unigraphics they had to relearn the complex procedures needed, which took too much time. DeskProto is exactly suited for us, as, although it offers less functionality, it is much easier to use". The difference between both CAM solutions is that high end CAM software is aimed at toolmakers, who want to be able to control any milling parameter - they know what they are doing. DeskProto is aimed at designers who are not so concerned about acquiring unnecessary CAM knowledge. DeskProto makes the progression from 3D CAD files to CNC toolpaths very easy. It will take care of any potential problem and solve it without bothering the user. It is also, unsurprisingly, much cheaper.

Rapid Prototyping can be done using Layered Manufacturing Technology on a system that stacks thin layers of material, and also using CNC milling technology on a system that removes small chips of material. The first technology is able to handle very complex geometries, the latter offers the advantages of a much lower price (of the system and per model), a free choice of materials and a free choice of accuracy (both rough concept models and detailed presentation models are possible) and the possibility of large size models.

DESKPROTO UNWRAPPED.

You can download a 30day trial version of the software in Full or Lite format from the software companies' website. When I did this, I was amazed at the small size of the software - less than 4Mb! I did some checks to make sure that I had completed the download correctly, and finding nothing, installed and ran the software instead. Small it may be, but like the ad on the TV - "it does everything it says on the can!".
DeskProto has been developed to accept CAD data from all leading 3D modelling packages - in the form of STL files, VRML and a subset of DXF. It handles 3 axis milling, and the software contains a library of the most popular types, and the radii and diameter of the cutters.

Although it can be run in custom mode, the first-time user would be advised to let the Wizard take you through the simple steps. The first of these sets up the software for Basic Milling, Two-sided Milling or Rotation axis milling. Delft's latest release of the software allows the

write and save the final NC programme - as an .iso file for instance.
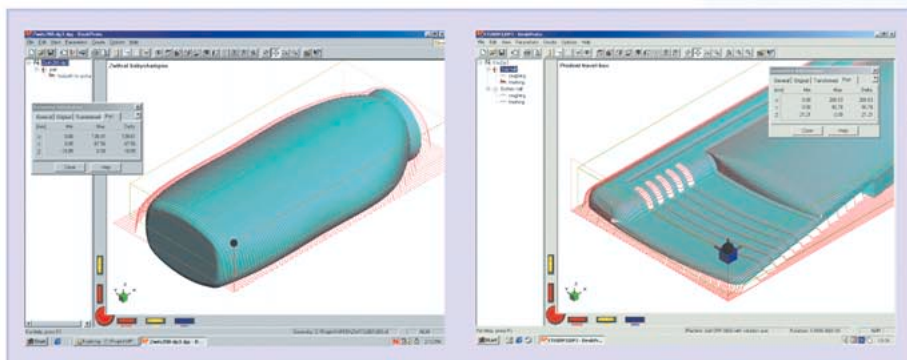
Numerous icons appear in the tool bar at the top of the screen. Most of these relate to the various viewing possibilities. A number of different views can be placed in various configurations on the

defined for roughing. Here, also segment parameters can be set and the correct way for the cutter to handle borders - whether to allow for extra for the cutter, or for the cutter to stay entirely within the segment.

Milling directions can vary between meander - where the cutter head moves backwards and forwards across a surface, conventionally moving in the direction of the cutter (a scoop cut) or climbing, where the cutter blade chops downwards into the material. This section also allows dynamic feedback control for plunge movements and for high chip loads, where the operator can define the percentage of feed rate they would like to impose.

user to choose between standard 3 axis milling - x,y,z or 'Barbecue milling' - x, z, a, the third axis rotating the model, as on a spit, for milling!

The geometry is then loaded into the software - a number of useful samples appear in the trial version - and the user is reminded that the cutter will operate parallel to the z axis. So that the model can be accommodated by the milling machine, it can be scaled down up or down. As with the model displays, the rotation parameters and the dimensions can be verified using a small pop-up screen. If the whole model is not required for milling, it can be segmented, so that just the upper half can be milled - or a custom segment can be configured.

Choosing a cutter is straightforward from the list supplied - bull nose, conic engraving tools, flat tip - and once chosen, available distances between toolpaths and skip distances are automatically determined from the cutter size. Little else needs to be done, except for the software to calculate the toolpath and to

screen, the user choosing which he wishes to manipulate to inspect the model or the toolpaths. Rotating, panning and zooming in and out of models can be accomplished by selecting the appropriate function for the mouse - or by using the rather quaint, but handy dials at the bottom left of the model screen. A project tree keeps track of the simple operations to the left of this screen.

Parameters selection brings up some more advanced utilities. In particular, the geometry section of Edit Part Parameter allows the user to handle transforms, select inverse milling, place support bridges for parts that would otherwise have no connection, create settings for segments and define the levels of ambient areas.

Editing Milling Operation parameters defines the way in which the cutter moves across the material - in parallel to one or other of the sides, in a spiral or performing cross cuts. Smooth contours can be defined at ambient levels, and skin thicknesses and layer heights

Befitting its role as a CAM tool for designers and not toolmakers, all parameters in edit mode are featured in graphic mode, so that the designer has a clear idea of the function of each one. Furthermore, backtracking through all of the operations is simple, enabling mistakes made in selection of tools and definition of parameters to be quickly rectified.

Finally, all that remains is for the programme to inform the user how long the milling operation should take. Delft Spline Systems - disregard the implications of the name, as the company is now concentrating on DeskProto and similar software programmes and is no longer situated in Delft, but in Utrecht - offers the programme on a 30 day trial period from its Internet website. It is a valuable rapid prototyping tool for designers that not only provides a fast and low cost route for creating product prototypes, but feeds them with just the right amount of information about the milling process to keep the manufacturers happy. CU

www.deskproto.com